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The dyes of the “Coptic” textiles at the Museo Egizio in Torino (Italy)

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The Coptic textile collection of the Museo Egizio encompasses about 250 textiles, dated from the Roman to the Islamic period according to iconography, style and weaving techniques. Many of them are decorative bands (*clavi*), rings/ovals (*orbiculae*) or squares/rectangles (*tabulae*) which were cut out from larger textiles, although the collection also encompasses furnishing textiles (carpets and blankets), some tunics and accessories such as wraps, bags and headdresses.

All the textiles have been considered within a broad project aimed at investigating the production techniques, at documenting the conservation state and (possibly) at reconsidering the attributed age. Within the project the textiles have been analysed by means of a set of analytical techniques in order to reveal the dyes that have been employed to obtain the colours. The textiles were preliminary subjected to a non-invasive screening by portable fiber optics UV-Vis diffuse reflectance spectrophotometry (FORS) and portable fiber optics fluorimetry (FL), which were employed sequentially on a same spot. The analyses lead us to obtain an overall general picture of the dyes by performing a large number of analyses on the same object and by combining the information obtained from each of the two spectroscopic techniques. The non-invasive survey allowed us to focus the sampling on representative textiles and 32 micro-samples were then taken in order to obtain a more in-depth view on the dyes through high performance liquid chromatography coupled with diode-array spectrophotometric and mass spectrometric detection (HPLC-DAD-MS).

The collected data have been compared with previously published results with the aim of highlighting a possible link between the age of the textile and the dyes. Moreover, the combined use of spectroscopic and chromatographic techniques allowed us to compare the results for the non-invasive and the micro-invasive approach, and to go deeper into the dyeing technology by detecting unexpected combinations of dyes.

In particular, the use of a double dyeing with madder and Indian lac dye was revealed in some Roman-Byzantine and Byzantine textiles.